



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 22104-2008

Soil quality - Analysis of fluoride - Ion selective electrometry

土壤质量 氟化物的测定 离子选择电极法

Issued on: June 27, 2008

Implemented on: October 1, 2008

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine of the People's Republic of China;
Standardization Administration of China**

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Foreword

This standard is proposed and managed by the People's Republic of China Ministry of Agriculture. This standard was drafted. Ministry of Agriculture, the Environmental Protection Institute, Guangxi agricultural environment monitoring station. The main drafters of this standard. Liu Chi, XU Ya-ping, war Xinhua, Cai Yanming, Liu Yan, Liu Ming. Determination of soil quality fluoride Ion Selective Electrode

1 Scope

GB/T 22104-2008 is the Chinese national standard on soil quality - analysis of fluoride - ion selective electrometry. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 27 June 2008 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 October 2008. Classification: ICS (ICS) , CCS Z18. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the determination of soil fluoride ion selective electrode method. This standard applies to the determination of fluoride content in soil ion selective electrode method. The detection limit of this method is standard 2.5µg. Principle

2 When the fluorine electrode and the test solution in contact with the electrode potential relationship solution of fluorine ion activity generated obey the Nernst (Nernst) equation. $E = E_0 - S \log a_{F^-}$ Where. E

--- measured electrode potential; E_0

--- reference potential (fixed value) than the electrode; S

--- slope fluorine electrode; -

--- F Ba concentration of fluoride ions in solution. When the control test solution total ionic strength is constant, it changes with the electrode potential of fluorine ion concentration in the test solution varies, E and Ba F- log linear relationship. That will generally total ionic strength buffer solution was added, to eliminate or reduce the ion concentrations of different sizes gravity Difference to the activity coefficient is 1, with a concentration in place of activity. Samples with sodium hydroxide at high temperatures melted with hot water extraction, and adding an appropriate amount of hydrochloric acid, so that there is interference cations into insoluble Hydroxide, after removing the clarified solution is adjusted to a near neutral pH, under conditions of total ionic strength buffer solution exists, the direct use of electrical fluoro Pole method.

3 Reagents

The reagents used in this standard, unless otherwise indicated, reagents were of analytical grade, the water is deionized water or fluorine-free distilled water. 3.1 (1 + 1) hydrochloric acid solution.

3.2 Sodium hydroxide (solid). tabular grains. 3.3 0.2mol/L sodium hydroxide solution. Weigh 0.80g of sodium hydroxide, dissolved in water, dilute with water to 100mL. 3.4 0.04% bromocresol purple indicator. bromocresol purple weighed 0.10g, 9.25mL dissolved in sodium hydroxide solution (3.3), diluted with water to 250mL.

3.5 total ionic strength buffer solution (TISAB) 3.5.1 1mol/L sodium citrate (TISABI). weigh 294g sodium citrate ($\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$) in 1000mL beaker In about 900mL of water was added to dissolve, using hydrochloric acid solution (3.1) pH to

6.0 to 7.0, transferred to 1000mL volumetric flask, diluted with water To the mark, shake.

3.5.2 1mol/L hexamethylenetetramine -1mol/L potassium nitrate -0.15mol/L Tiron (TISABII). Weigh 140.2g six Methylene tetraamine $[(\text{CH}_2)_6\text{N}_4]$, 101.1g potassium nitrate (KNO_3) and 49.8g Tiron ($\text{C}_6\text{H}_4\text{Na}_2\text{O}_8\text{S}_2 \cdot \text{H}_2\text{O}$), add water-soluble Solution, adjusting the pH to

6.0 to 7.0, into 1000mL volumetric flask, dilute to the mark with water, shake well.